

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
29 December 2004 (29.12.2004)

PCT

(10) International Publication Number  
**WO 2004/114514 A1**

(51) International Patent Classification<sup>7</sup>: **H02P 6/10**

(21) International Application Number:  
PCT/EP2004/006842

(22) International Filing Date: 24 June 2004 (24.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
03425409.4 24 June 2003 (24.06.2003) EP

(71) Applicant (for all designated States except US): **ASKOLL  
HOLDING S.R.L.** [IT/IT]; Via Industria, 30, I-36031 Po-  
volaro di Dueville (IT).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **MARIONI, Elio**  
[IT/IT]; Via Molino, 6, I-36031 Dueville (IT).

(74) Agents: **BOTTI, Mario** et al.; Botti & Ferrari S.r.l., Via  
Locatelli, 5, I-20124 Milano (IT).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

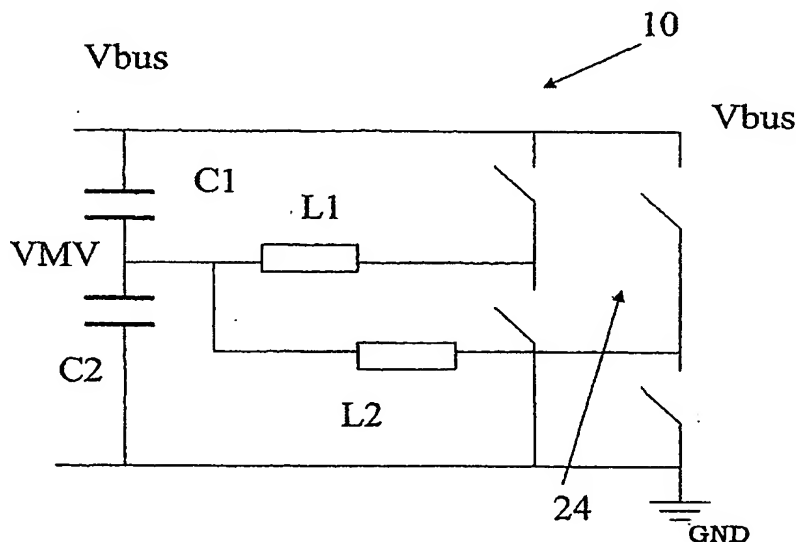
(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,  
SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: CONTROL METHOD FOR A SYNCHRONOUS MOTOR, PARTICULARLY FOR CIRCULATION PUMPS



(57) Abstract: The present invention relates to a control method for a synchronous electric motor with permanent-magnet rotor, particularly for fluid circulation pumps in conditioning systems and/or household appliances, wherein the application of predetermined voltage values to each of the windings (L1, L2) of the motor is provided, by means of a converter control circuit (10). The method provides a continuous measure of the amplitude of the bus (V), ripple and a comparison with a reference value, for example with respect to an average bus voltage level. According to the comparison result the motor is driven by means of a variation of the winding voltage having an sinusoidal wave form.

WO 2004/114514 A1

Express Mail Label  
EV336981970US